

Description

ER2209/1.4462 is a duplex stainless steel filler metal designed for welding austenitic-ferritic stainless steel alloys containing approximately 22% chromium, 5% nickel, and 3% molybdenum. It exhibits high tensile strength, resistance to stress corrosion cracking, and improved weldability compared to the base metal.

Chemical Composition

Element	Weight %
Carbon (C)	0.03 max
Manganese (Mn)	0.50-2.0
Silicon (Si)	0.90 max
Chromium (Cr)	21.5-23.5
Nickel (Ni)	7.5-9.5
Sulfur (S)	0.03 max
Phosphorus (P)	0.03 max

Molybdenum (Mo)	2.5-3.5
Copper (Cu)	0.75 max
Nitrogen (N)	0.08-0.20

Mechanical Properties

Property	Value
Ultimate Tensile Strength	104,400 psi (720 MPa)
Yield Strength (0.2% offset)	81,200 psi (560 MPa)
Elongation	26%

Thermal & Physical Properties

- Coefficient of Thermal Expansion (20-100°C): $13.5 \times 10^{-6} / ^\circ\text{C}$
- Thermal Conductivity (20°C): 15 W/m·K
- Density: 7.8 g/cm³

Other Designations

- UNS Number: S39209
- AWS Classification: ER2209
- DIN Number: 1.4462

Fabrication & Heat Treatment

- Welding: GTAW, GMAW, SAW
- Shielding Gas: 100% Argon for GTAW, Argon + 2% Oxygen for GMAW
- Flux: Agglomerated or fused for SAW
- Heat Treatment: Solution annealing at 1040-1100°C followed by water quenching

Applications

- Welding of duplex stainless steel pipes and fabrications in the offshore oil and gas, chemical processing, and pulp and paper industries
- Cladding of carbon and low-alloy steels to obtain corrosion-resistant layers

Supplied Forms

- Solid wire for GTAW, GMAW, and SAW processes
- Available in various diameters and spool/coil sizes

Features

- High tensile strength and resistance to stress corrosion cracking
- Improved resistance to pitting and intergranular corrosion in chloride and hydrogen sulfide-containing environments
- Suitable for welding duplex stainless steels with 22% chromium, such as UNS S31803 and S32205

VENUS
STAINLESS STEEL WIRES & BARS